



NIST Manufacturing Roundtable

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U. S. Manufacturing Trends

- History
 - Manufacturing growth began with the industrial revolution.
 - Manufacturing migration began in 1946 and has continued to accelerate
 - Asia – Japan, Korea, Malaysia, China.
 - Europe and Americas – Ireland, old eastern block, Mexico and Brazil.
 - Moved from low to high quality and complexity.
 - Time constant moving from 30 to about 15 years.
- Driving factors
 - Initially, low cost and low skill labor for manual tasks.
 - Capital investment supported by local government for higher complexity manufacturing plants.
 - Subsidized factory space, taxes, worker training.
 - Global economy forces global competitiveness and cost structure.
 - Cultural and political differences
 - Capitalism vs. oligopoly – Government control of producers vs. market control.
 - US view is to protect citizens from business, some other nations believe business needs protection from outsiders.

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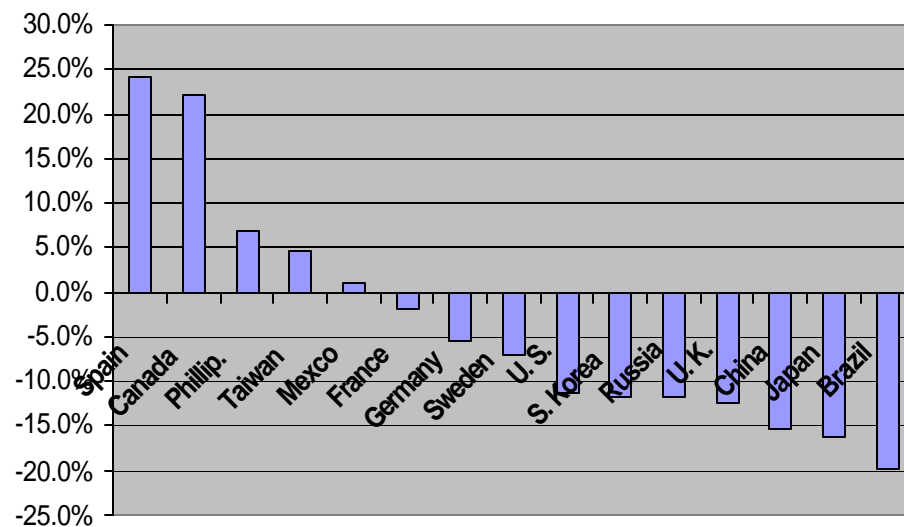
Some Thoughts About The Future

- Are we bailing against the tide?
 - Most modern manufacturing can be accomplished anywhere in the world. The more mature the product is, the more likely it will be manufactured outside the U. S.
 - Most global companies require local sourcing, thereby creating local pockets of manufacturing in countries of use.
 - Capital and cost of capital will always enable competitive mass manufacturing enterprises.
 - Manufactures must compete globally or fail in the marketplace.
- So, what can we maintain and/or protect of U. S. manufacturing?
 - Enabling technology, invention and development.
 - Prototyping and early production by inventors.
 - Technology that has a very high rate of change in manufacturing processes.
 - Products protected by intellectual property rights.

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Change in Manufacturing Emp. 1995 to 2002



Source : Alliance Capital

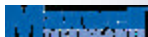
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Possible Actions and Policies

- Encourage policies that create global competitiveness.
 - Low cost of capital or favorable tax treatment of long term capital (Federal Reserve and tax policy).
 - Maintain rewards for free enterprise (equity markets)
 - R&D credits (tax policy)
 - ATP for emerging competitive technologies. (Gov. investment)
 - Incentives to promote the best and brightest in technology. (scholarships)
 - Capital incentives to obtain best and brightest (stock options, SEC policy)
 - Develop system to level environmental cost for imported goods. (world policy)
- Recognize what U. S. can control and what is controlled by the global economic forces. (global wisdom)



My Conclusions

Reality is; mass manufacturing of mature products is not likely to be performed cost competitively in the U. S.!

Therefore, focus on rapid innovation, attractive capital and incentives to create the best opportunities for maintaining a manufacturing base in the U. S.

Agricultural revolution
↓
Industrial revolution
↓
Technology revolution